In the Claims

1-6. (Canceled)

7. (Currently Amended) A channel assignment scheme for a node of a mesh network, comprising:

the node determining a number of hops between the node and a server of the mesh network;

assigning a first channel to an uplink for [a] the node;

assigning a second channel for a downlink for the node;

maintaining the first channel and the second channel distinct from an uplink channel of an upstream node;

wherein the assignment of first channel and the second channel for the node is based on [a] the number of hops [from] between the node to the server [a distinguished node].

8. (Original) The method of claim 7, wherein there are multiple downlink nodes and the multiple downlink nodes use multiple downlink channels.

9. (Currently Amended) The method of claim 7, wherein the number of hops is determined from routing information carried in [the] routing packets.

10. (Original) The method of claim 9, wherein the routing information is propagated in the network on some or all of the channels available in the system.

11. (Original) The method of claim 9, wherein the routing information is propagated in the network on a dedicated channel.

12. (Currently Amended) The method of claim 7, wherein the uplink channel of the node is assigned by a default gateway.

13. (Currently Amended) The method of Claim 12, wherein assigning the downlink channel for a node comprises:
determining a plurality of potential channels for communication;

sending a reservation packet to trigger testing of each of the plurality of potential channels; and

[determining a] assigning the downlink channel based on responses to the reservation packet.

14. (Currently Amended) The method of Claim 13, wherein testing comprises:

each downstream node sending a plurality of packets to the node; and

evaluating a channel with [best greater] a link quality greater than other channels.

15. (Original) The method of Claim 14 wherein link quality is estimated by the throughput on the link.

16. (Original) The method of Claim 14 wherein link quality is estimated by measuring the packet error rate on the link.

17. (Original) The method of Claim 14 wherein link quality is estimated by the signal-to-noise ratio observed on the link.

18. (Original) The method of Claim 14 wherein link quality is estimated by the latency observed on the link.

19. (Withdrawn) A method to determine a quality of a link comprising:

sending a predetermined number of packets to an originating node in response to a reservation packet; and

deducing, at the originating node, a packet error rate based on a number of packets received without error; and

assigning best quality channel to the downstream connection from the originating node based on the packet error rate.

20. (Withdrawn) The method of claim 19, wherein the best quality channel comprises a plurality of downlink channels, and each downstream connection to a downstream node uses one of the plurality of downlink channels.

21. (Withdrawn) A method to determine a quality of a link comprising:

sending a predetermined number of packets to an originating node in response to a reservation packet; and

deducing, at the originating node, a throughput rate based on the packets received without error; and

assigning a best quality channel to the downstream connection from the originating node based on the observed throughput.

22. (Withdrawn) The method of claim 21, wherein the best quality channel comprises plurality of downlink channels, and each downstream connection to a downstream node uses one of the plurality of downlink channels.

23. (Withdrawn) The method of claim 22, wherein the determination is performed periodically, and on all downstream links from a given node and on all available channels in order to determine the choice of channel or channels for the downlink for which the best link quality is achieved.

24. (Withdrawn) A method to allocate communication channels that results in enhanced resistance to external interferers in a wireless mesh network comprising:

periodically evaluating a downstream channel by receiving a plurality of packets from each downstream node for each of a plurality of channels; and

selecting as the downstream channel a best of the plurality of channels based on link-quality.

25. (Withdrawn) The method of Claim 24, wherein the method results in a channel allocation for the system that eliminates interference between adjacent links or next-to-adjacent links.

26. (Withdrawn) The method of Claim 24, wherein the communications channel to be used on a link (connecting two nodes) is assigned by the node that is at a smaller number of hops to the access point.

27. (Withdrawn) The method of Claim 24, wherein all the links comprising the downlink from a given node are assigned to the same channel.

28. (Withdrawn) The method of Claim 24, wherein the links comprising the downlink from a given node may be assigned to different channels.

29. (Withdrawn) The method of Claim 24, wherein the channel allocations for the system may change in response to the presence of an interferer or jammer transmitting on one or more of the channels used by the system.

30. (Withdrawn) The method of Claim 24 wherein the presence of an interferer or a jammer is inferred based on the link quality observed on each link.

31. (Previously Presented) The method of Claim 7, wherein the channels are frequency
channels.

32. (Previously Presented) The method of Claim 7, wherein the channels are different
spreading codes in a spread-spectrum CDMA system.

33. (Previously Presented) The method of Claim 7, wherein the channels are different polarizations of the transmitted waveform.

34. (Previously Presented) The method of Claim 7, wherein the channels are different spatial signatures as determined by a smart antenna or adaptive antenna array at the receiver.

35. (Currently Amended) A channel assignment scheme for a node of a mesh network, comprising:

determining a number of hops between the node and a server of the mesh network;

assigning a first channel to an uplink for [a] the node;

assigning a second channel to a downlink for the node;

maintaining the first channel and the second channel distinct from an uplink channel of an upstream node; and

assigning the first channel and the second channel for the node based on a number of hops from the node to a distinguished node and a number of available channels.

36. (Previously Presented) The method of claim 35, wherein data regarding number of hops to the distinguished node is carried within a routing packet to the node.

37. (Previously Presented) The method of Claim 34, wherein assigning the downlink channel for a node comprises:

determining a plurality of available channels for communication;

sending a reservation packet to trigger testing of each of the plurality of available channels; and

determining a channel based on responses to the reservation packet.

38. (Previously Presented) The method of Claim 37, wherein testing comprises:

each downstream node sending a plurality of packets to the node; and

evaluating a channel based on link quality.

39. (Previously Presented) A node comprising:

a transceiver having two interfaces, wherein each interface has a channel; and a channel manager, the channel manager to assign a first channel for a first interface to an uplink for a node and a second channel for a second interface to a downlink for the node, wherein the assignment is based on a number of hops from the node to a distinguished node.

40. (Previously Presented) The node of Claim 39, wherein each interface is half-duplex.

41. (Previously Presented) The node of Claim 39, wherein the channels are frequency channels.

42. (Previously Presented) The node of Claim 39, wherein the channels are different
spreading codes in a spread-spectrum CDMA system.

43. (Previously Presented) The node of Claim 39, wherein the channels are different polarizations of the transmitted waveform.

44. (Previously Presented) The node of Claim 39, wherein the channels are different spatial signatures as determined by a smart antenna or adaptive antenna array at the receiver.